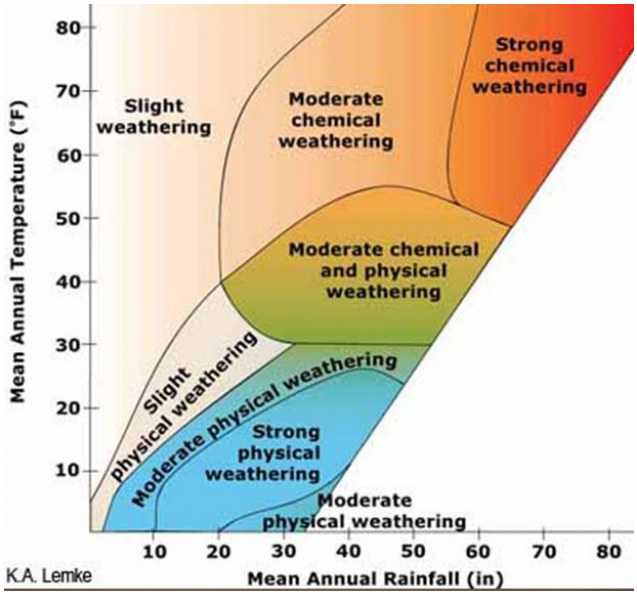
Earth Science Guide to what you should be studying for quiz on Weathering, Erosion and the Rock Cycle.

1. What is weathering?
    a. Agents of weathering
        i. Biological
            1. Plants
            2. Animals (including man)
            3. Fungi
        ii. Chemical
            1. Dissolution (Acid rain, Humic Acid)
            2. Oxidation
            3. Tarnishing
        iii. Physical or Mechanical
            1. Frost wedging (Large diurnal temperature range) (Tallus)
            2. Salt wedging
            3. Water (Wave cut platforms, Coves, Headlands, Arches, and Stacks)
            4. Wind (Abrasion)
    b. Mass movement
        i. With water – Mudflow, Landslide, Slump
        ii. Without water – Rock fall, soil creep
2. Factors affecting rates and types of weathering
    a. Climate
        i. Temperature
        ii. Precipitation
    b. Surface area
        i. What is the role of surface area on rates of weathering?



3. What is Erosion?
    a. Agents of Erosion
        i. Wind
            1. Creates pitted surfaces
        ii. Running Water (rivers and streams etc.)
            1. Creates smooth surfaces
                a. Clasts and Matrix
                b. Conglomerate vs. Breccia
                c. What does the shape of the clasts tell us about how far they have travelled from the parent rock after being weathered?
                d. Solution vs. Suspension
                e. Saltation vs. Creep
        iii. Waves
        iv. Ice sheets/ Glaciers
            1. Scrapes the bed rock and transports material in ice sheets.
            2. As the ice sheet grows sediments are pushed forward and transported great distances.
            3. When the icesheet retreats the sediments are left behind.
        v. Gravity
4. Rock Cycle
    a. Sedimentary Rocks
        i. Formation of rocks – Weathering, Erosion, Deposition, Compaction and Cementation
        ii. Why does deposition occur?
        iii. Porosity vs permeability
        iv. Cements
            1. Calcite
                a. Made by foraminifera (we looked at these under the microscope)
                b. Precipices out of solution (Oolites ASK ABOUT THIS NOW)
            2. Iron Oxide (Rust)
            3. Chert (Diatoms – role in forensic sciences)
    b. Igneous Rock
        i. Intrusive
            1. Magma
            2. Large Grains (why) - cooling rate?
            3. Light colored (why)
            4. Felsic
            5. Examples
        ii. Extrusive
            1. Lava
            2. Small Grains (why) - cooling rate?

3. Dark colored
4. Mafic
5. Examples

iii. Uses of Igneous rocks or mineral deposits associated with volcanoes and hydrothermal fluids
iv. Role that volcanoes played in making Earth habitable?
v. Semi-precious igneous rocks (know a few examples) all Silicon dioxide rich WHY?
vi. Precious Igneous rocks
    1. Kimberlites – What are they?
    2. Why do Geologists study them?
    3. What are conflict diamonds?

c. Metamorphic rocks
    i. What are they?
    ii. What type of rock(s) can undergo Metamorphosis?
    iii. What is a protolith?
    iv. Types of Metamorphosis
        1. Regional
        2. High pressure, low temperature
        3. How are minerals in the rock changed?
        4. How is the porosity and permeability changed?
        5. Low vs High grade metamorphosis?
            a. Foliated vs non-foliated rocks?
            b. Why would some rocks never develop foliations?
            c. Shale – Slate – Phyllite – Schist – Gneiss
            d. Metamorphosis is unidirectional
            e. How can we get a shale from a Gneiss?
        6. Contact
            a. Local
            b. High temperature, low pressure
            c. Relative to the heat source, where is the highest-grade metamorphism found?
        7. Hydrothermal
            a. Role of hot fluids in causing metamorphosis
            b. Mineral veins
                i. What are they?
                ii. Source of acidity?
                iii. Acidity- How does this influence solubility of minerals?
                iv. Temperature – How does this influence solubility of minerals?
                v. Why are they useful to man?